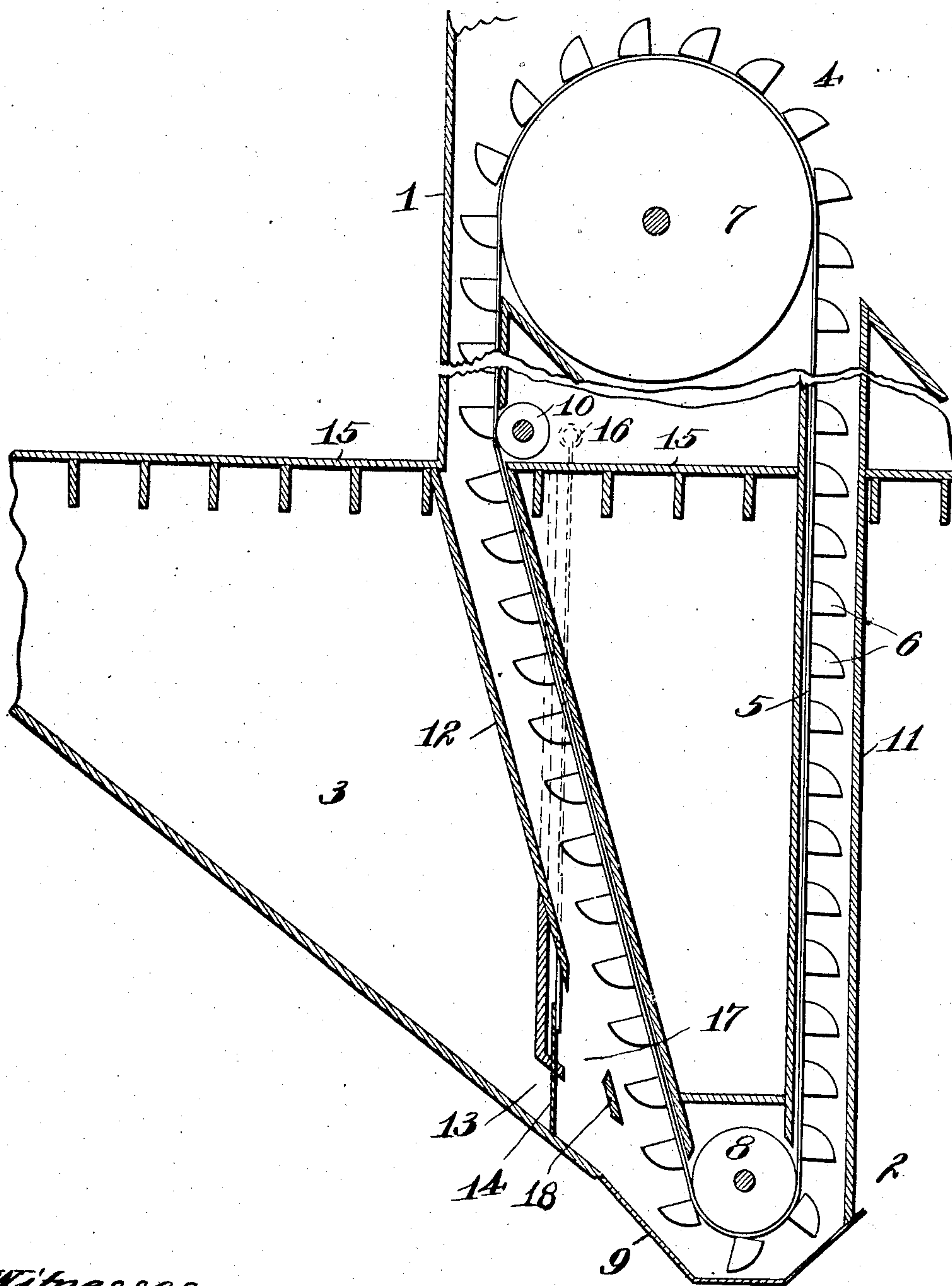


No. 850,222.

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T. F. HALL.
GRAIN ELEVATOR.
APPLICATION FILED MAR. 12, 1906.



Witnesses,

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UNITED STATES PATENT OFFICE.

THOMAS F. HALL, OF OMAHA, NEBRASKA.

GRAIN-ELEVATOR.

No. 850,222.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed March 12, 1906. Serial No. 305,523.

To all whom it may concern:

Be it known that I, THOMAS F. HALL, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Grain-Elevators, of which the following is a specification.

This invention relates to apparatus for elevating grain and similar substances from a receiving-point to a storage bin or bins; and the object of the invention is the production of improved means for preventing clogging or choking in such apparatus.

The accompanying drawing is a somewhat diagrammatic representation in fragmental vertical section of a grain-elevator embodying the features of my invention.

Said elevator comprises the tower 1, the pit 2, and a receiving grain-bin 3. The conveyer mechanism 4 for the elevator comprises an endless belt 5, carrying grain-cups 6 and running over the drive-pulley 7, rotatably mounted in the elevator-tower 1, a pulley 8 in an elevator-boot 9, located in the pit 2, and a guide-roller 10. As shown in the drawing, the conveyer is so arranged that the ascending side of the belt 5 is inclined. The descending side of the belt 5 is inclosed within the elevator-leg 11 and the ascending side of said belt within an inclined elevator-leg 12, both of said legs being attached at their lower ends to the elevator-boot 9. The receiving grain-bin 3 communicates with the elevator-boot 9 by means of a discharge-spout 13, said spout being arranged to be closed by a gate 14, controlled from any convenient point, as the working floor 15 of the elevator, by means of an operating-rod 16.

As is well known, a flowing mass of granular material comes to rest with its upper surface at an angle with the horizontal, said angle being termed the "angle of repose," and the flow of such material from a receptacle may be suspended by raising the upper surface of the issuing stream to or above said angle. I employ this principle for regulating the flow of grain from the receiving-bin 3 to the elevator-boot 9 by providing means for returning the overflow from the conveyer-cups to the inflowing stream of grain. As herein shown, said flow-regulating means comprises a relief-chamber 17, located between the receiving-bin 3 and the elevator-boot 9. Said relief-chamber communicates

at its upper end with the lower end of the inclined leg 12 and at its lower portion with the boot 9 adjacent to the outlet from the grain-bin 3. A barrier 18 extends horizontally across the relief-chamber 17 adjacent to the path of the rising grain-cups 6.

In operation power is applied in any suitable way to operate the conveyer 4, the grain-cups 6 moving down the the elevator-leg 11 through the boot 9 and up the inclined leg 12. Grain is admitted to the boot 9 from the receiving-bin 3 by opening the gate 14. As the grain-cups 6 pass through the boot 9 they not only become filled with grain, but also carry upward between them a considerable quantity of the grain. If no means were provided for relieving the conveyer of this excess load, the ascending leg 12 and the boot 9 would soon become choked, causing the conveyer-belt 5 to slip upon its drive-pulley 7 and preventing the operation of the elevator. To obviate this difficulty, I provide, as hereinbefore described, a relief-chamber 17 in position to receive the grain spilled from the overfull grain-cups 6, thus preventing the grain from being "pumped" up into and accumulating in said elevator-leg. Said relief-chamber also serves to regulate the flow of grain from the grain-bin 3 by returning the grain from the overflowing conveyer-cups to the stream of grain issuing through the discharge-spout 13. When the grain thus returned to the stream of entering grain is sufficient in quantity to raise the upper surface of said stream above the natural angle of repose of the grain, the flow of grain through the spout 13 will be cut off until such time as the level of the grain falls below said angle. The grain in the relief-chamber 17 being nearer to the boot 9 than that within the bin 3 is the first to be returned to the boot 9, the flow from the bin 3 not recommencing until the level of the grain in said relief-chamber has fallen below the angle of repose. Any grain spilled from the cups 6 within the leg 12 falls away from the ascending line of cups onto the lower wall of said leg and is conducted to the relief-chamber 17. By thus inclining the elevator-leg inclosing the rising conveyer-cups I obviate the necessity for using special means for conducting the grain from the overflowing cups away from the line of cups and out of said leg.

I claim as my invention—

1. In a grain-elevator, in combination, an inclined conveyer; and means extending along said conveyer at the under side thereof
5 for conducting the overflow away from the conveyer.

2. In a grain-elevator, in combination, an inclined conveyer; a grain-spout; and a relief-chamber between said grain-spout and
10 the lower end of said conveyer.

3. In a grain-elevator, in combination, an inclined conveyer; an inclined elevator-leg inclosing said conveyer; a grain-spout; and a relief-chamber between said grain-spout and
15 the lower end of said elevator-leg.

4. In a grain-elevator, in combination, an inclined conveyer; a grain-spout; a barrier adjacent to the path of the conveyer-cups

and between said cups and the discharge end of the grain-spout; and means for conducting
20 the overflow from the ascending conveyer-cups to the space between said grain-spout and said barrier.

5. In a grain-elevator, in combination, an inclined conveyer; an inclined leg inclosing
25 said conveyer; a grain-spout; a barrier adjacent to the path of the conveyer-cups; and a relief-chamber communicating with the lower end of said inclined leg and with the
30 space in front of the discharge end of said grain-spout.

THOMAS F. HALL.

Witnesses:

ALICE McSHANE,
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